

REMARKS

Claims 1-6 are currently pending in the present Application, with new claims 5-6 being added in this Amendment.

Claims 1-4 stand rejected under § 103(a) as unpatentable over U.S. Patent No. 5,164,236 to Schmid ("Schmid") in view of U.S. Patent No. 6,228,483 B1 to Sarin ("Sarin"). In addition, objections to Specification ¶ [0020] and claim 3 have been entered due to typographic errors.

Objections: The Applicant has amended ¶ [0020] and claim 3 to correct the typographic errors in accordance with the Examiner's helpful suggestions. Withdrawal of the pending objections is respectfully requested.

Rejection Under § 103(a): The Applicant respectfully traverses the pending rejection of claims 1-4 as unpatentable over Schmid in view of Sarin, on the grounds that these references fail to teach or suggest all the features of the present invention recited in the claims.

The Present Invention: The present invention is directed to, *inter alia*, a combing ring for an opening roller of an open-end spinning arrangement, in which the combing ring is provided with a two-part surface coating, a high wear-resistant bottom coating applied using a physical vapor deposition ("PVD") process, and a less wear-resistant top coating applied over the bottom coat.

One of the inventive aspects of this invention is application of a PVD process to form the bottom coating, which results in a product which is structurally different from previous coated combing rings. The Applicant recognized a unique property of the uneven coating generated by the PVD

process. Previously, hard wear-resistant bottom coatings have been uniform in strength and wear-resistance from their base to their outer surface. In the present invention, the PVD process is used to deposit droplets of the bottom coating material at the outer surface of the bottom layer which are *less* wear-resistant than the material in the underlying bulk coating layer. *See, e.g.*, Specification ¶ [0007] (“The droplets are significantly softer than the usual surface layer generated by the PVD coating.”). When coupled with a lower wear-resistant top coating (*e.g.*, nickel), it was found that during the combing ring run-in period, *both* the top layer and the less wear-resistant portions of the bottom coat *wear together* to reach a thickness that provides a desired smooth, long-term wear-resistant surface, without exposure of fibers to the harder bulk portion of the bottom layer material.

The Cited References: In contrast to the present invention, the Schmid reference teaches a nickel-coated metal carbide layer applied to a combing ring. The metal carbide layer is formed on the combing ring by plasma spraying, which results in a *uniformly hard* carbide layer on the combing ring. Schmid at 1:64-2:1. Thus, as the nickel coating is worn down in use, so-called “islands” of the hard metal carbide begin to protrude through the nickel coating. *Id.* at 1:55-59. While the exposure of the hard metal carbide may slow the coating wear rate, it does so at the expense of exposing the fibers to the potentially damaging hard metal carbide bottom layer material. This problem is avoided by the present invention, in which run-in wear is absorbed by *both* the nickel coating *and* the softer portion of the bottom layer material (the outer surface droplets),

which wear *together* until a uniform wear-resisting smooth surface is formed without exposing fibers to a hard, damaging coating material.

The Sarin reference is generally cited as teaching the use of a CVD or PVD process, and it is maintained that it would have been obvious to substitute a PVD process for Schmid's plasma spraying process. August 25, 2004 Office Action at 2-3. The Applicant respectfully submits that there is no teaching or suggestion in Sarin, Schmid or elsewhere for the present invention's application use of a PVD process *in such a manner as to obtain a variable-hardness bottom layer which cooperates with a top coating to provide a wear-resistant outer surface which is not potentially damaging to fibers*. Moreover, as noted in the MPEP at § 2143.01, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." Here, there is nothing in either reference which even hints at the benefits obtained by Applicant's application of softer PVD-deposited droplets at an outer surface of a bottom coating layer (*e.g.*, achieving desired wear resistance with lower fiber damage). Without any suggestion in the references that the substitution of Sarin's PVD process for Schmid's plasma spraying would result in the present invention's improved, less fiber-damaging structure, their combination fails to establish *prima facie* obviousness.

In view of the foregoing remarks, the Applicant respectfully submits that the present invention recited in claims 1-4 is patentable over the combination of Schmid and Sarin. Reconsideration and withdrawal of the pending § 103(a) rejection of these claims is respectfully requested.

CONCLUSION


The Applicants respectfully submit that claims 1-6 are in condition for allowance. Early and favorable consideration, and issuance of a Notice of Allowance for these claims is respectfully requested.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #010971.52628US).

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Respectfully submitted,



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